GIVENness and local contexts

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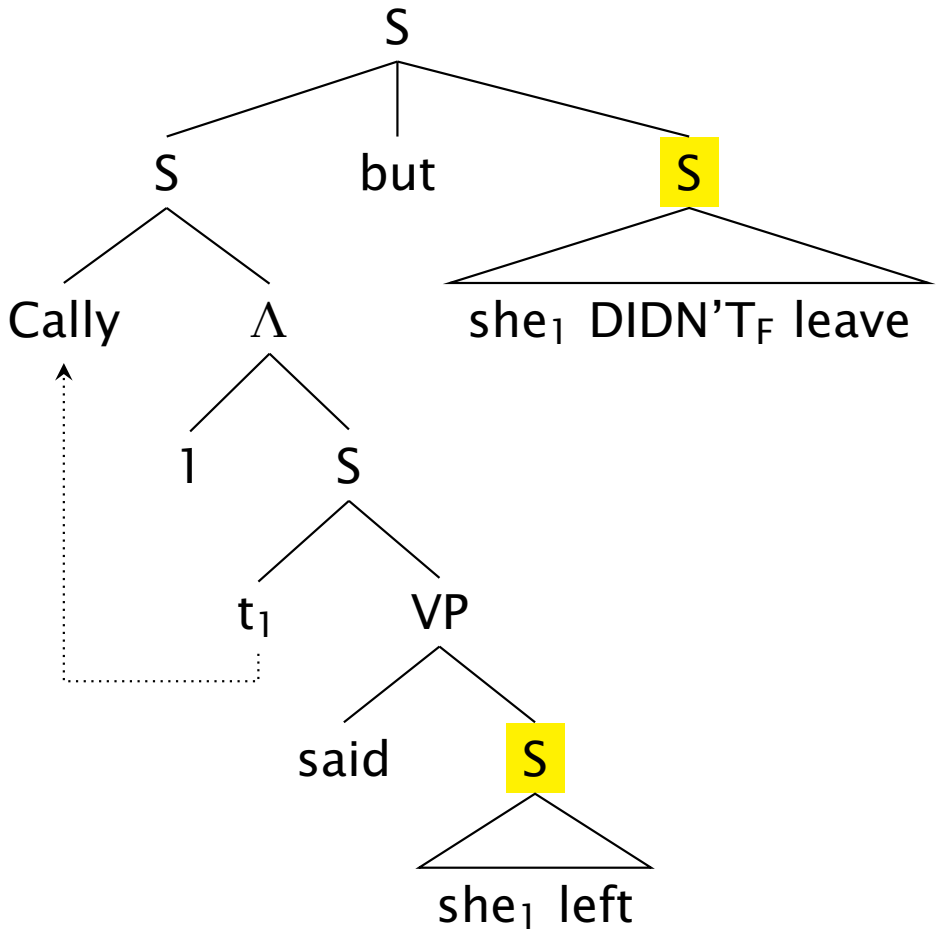
- GIVENness is checked **compositionally**, via operators in syntax
- GIVENness is **sensitive to the local context (assignment)**
- Generally: grammatical constraints like GIVENness must not unbind bound variables. Doing otherwise has paradoxical consequences.

Upshot: indices matter less for deaccenting/ellipsis than thought. They fix values for variables. But it's the *values* that matter (Jacobson 2009).

- This dissolves puzzles as old as the ellipsis literature, and helps ground a simpler theory of ellipsis based on *perfect identity*.
- Sheds new light on impossible ACDs, focused bound pronouns.


S
S
but
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Cally
Λ
she1 DIDN'TF leave
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said
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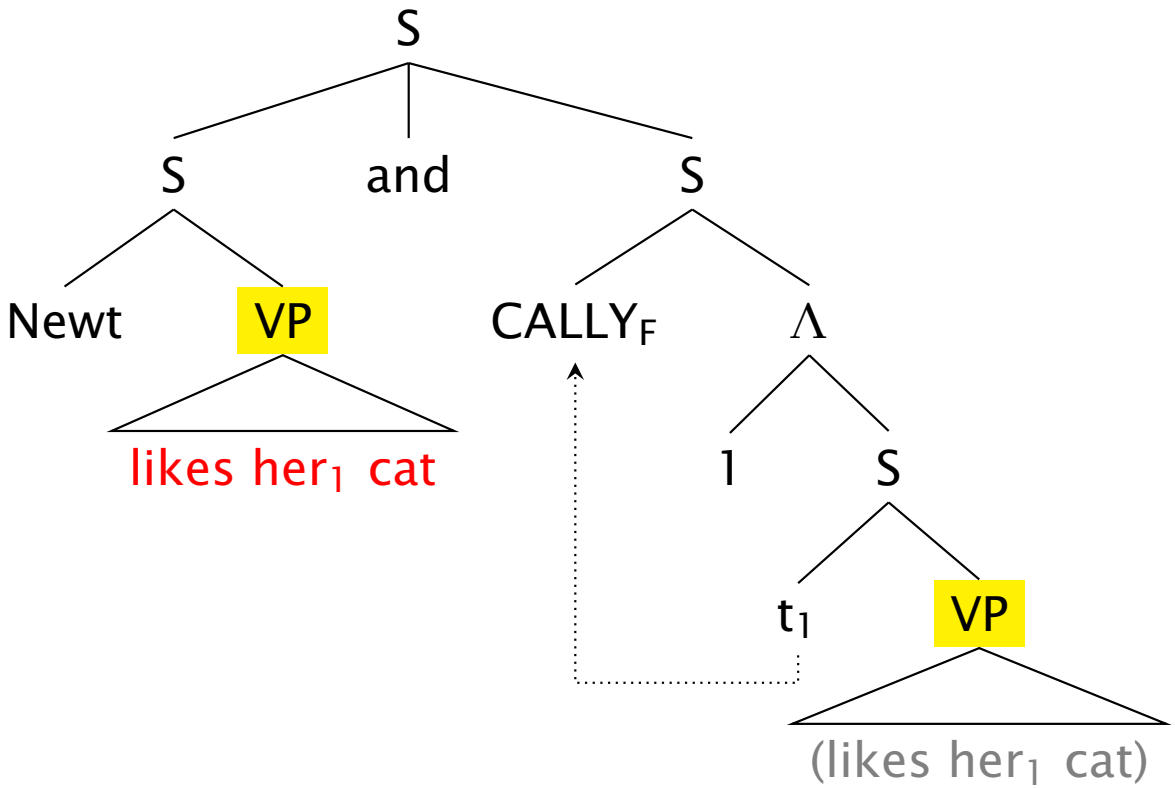
S
S
and
S
Newt
VP
CALLY$_F$
Λ
likes her$_1$ cat
1
S
t$_1$
VP
(likes her$_1$ cat)

GIVENness and anaphora

Damian blocked Steph, and then. . .

(1) SETH$_F$ blocked Steph.

(2) *STEPH$_F$ blocked Damian. underfocused

(3) *SETH$_F$ blocked STEPH$_F$. overfocused

Schwarzschild (1999)

- **GIVENness:** If B isn't F-marked, it must be GIVEN ⊣
- B is **GIVEN** iff it has an antecedent $A \cong B := [\![A]\!] \in [\![B]\!]_f$ ⊣
- **AvoidF:** F-mark as little as possible (w/o violating GIVENness) ⊣

$[\![B]\!]_f$ is the focus set gotten by varying F-marked things in B (Rooth 1985, Kratzer 1991)

F-mark all and only material in B without a correspondent in A:

$$\text{Damian blocked Steph} \cong \text{SETH}_{\text{F}} \text{ blocked Steph}$$

$$[\![\text{Damian blocked Steph}]\!] \in [\![\text{SETH}_{\text{F}} \text{ blocked Steph}]\!]_{\text{f}}$$

$$\text{block}(\text{damian}, \text{steph}) \in \{\text{block}(x, \text{steph}) \mid x : \text{e}\} \quad \checkmark$$

We need a definition of GIVEN that's explicit about assignments. Here's one possibility (after Heim 1997: 206, cf. Schwarzschild 1999: 152):

$$A \cong B \iff \forall g : [\![A]\!]^g \in [\![B]\!]^g_{\mathrm{f}}$$

Occasionally $\exists g$ is entertained (cf. Tomioka 2008, Griffiths 2018).

This $\cong$ sees indexical differences, even when blurred in a context. That is a problem. Suppose we're in a context where $g(1) = g(2)$.

(4) I saw her$_1$ and YOU$_F$ saw *HER$_{F,2}$.

Possible reply: forbid 'Redundant' assignments (Schlenker 2005)?

Or suppose we're in a context where $g(1) =$ **mary**.

(5) I saw Mary and YOU$_F$ saw *HER$_{F,1}$.

Possible reply: names are variables? But then we're back to (4).

Schwarzschild 1993, 1999; see also Jacobson 2004, 2009

Pronoun *meaning in context* is what matters (Schwarzschild 1993, 1999):

$$A \cong B \text{ at } g \iff [\![A]\!]^g \in [\![B]\!]^g_f$$

This makes better predictions:

(6) I saw her$_1$ and YOU$_F$ saw *HER$_{F,2}$. $g(1) = g(2) \rightsquigarrow$ overfocused

(7) I saw Mary and YOU$_F$ saw *HER$_{F,1}$. $g(1) =$ mary $\rightsquigarrow$ overfocused

Our improved $\cong$ evaluates A and B at the same "global" assignment. So $\cong$ **unbinds variables**, can't distinguish free and bound occurrences.

Even if $g(1) = \text{mary}$, $\cong$ in the yellow, though eventually not the orange.

(8) Newt likes her$_1$ cat . *CALLY$_F$ [1 t$_1$ likes her$_1$ cat] too.

(9) Steph hopes I cite him$_1$. *SETH$_F$ [1 t$_1$ hopes YOU$_F$ cite him$_1$].

Maybe unintuitive. . . But ok?

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Maybe unintuitive. . . But ok? No: in (10) GIVENness is satisfied, period!

(10) Cally [1 t$_1$ said she$_1$ left] but *she$_1$ DIDN'T$_F$ leave.

Empirics aside, this is *weird*. Bound variables *have values in their local contexts* (though from the 'outside' the idea that they have values may seem strange, cf. Fine 2003). GIVENness shouldn't ignore these values!

- And def shoudn't make their values the global-contextual ones

After all, presupposition satisfaction is checked in a local context:

(11) If there's an escalator in 18SEM, the escalator in 18SEM is hidden.

(12) Each of these students$_i$ brought their$_i$ laptop.

If the congruence constraint was a kind of presupposition (as has often been proposed), it would be surprising if it was not also checked 'in situ'.

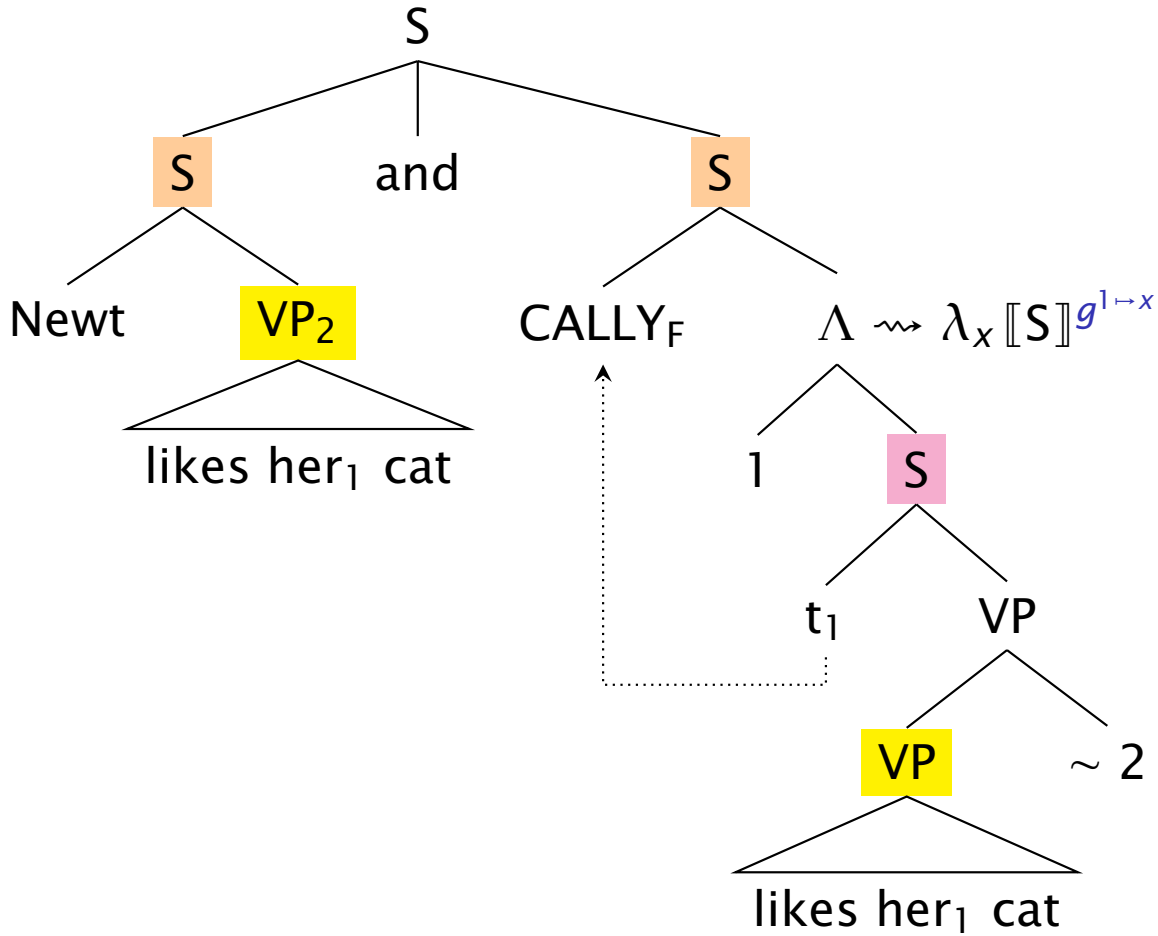
There is an alternative. Rooth's (1992a) $\sim$ **'interprets focus' in situ**, requiring its associate α to be congruent with the value of a variable n:

$$[\![B \sim n]\!]^g := \begin{cases} [\![\alpha]\!]^g \text{ if } g(n) \in [\![B]\!]^g_f \\ \text{undefined otherwise} \end{cases}$$

B and the $[\![A]\!]$ stored at n may be eval'd at **different assignments**.

I'm adopting a semantic theory of alternatives for concretness, but these points apply equally to syntactic theories of alternatives (Katzir 2007, Fox & Katzir 2011).

$g(1) = \text{mary}$



$$[\![\text{likes her}_1\ \text{cat}]\!]^{1\mapsto\text{mary}} \notin [\![\text{likes her}_1\ \text{cat}]\!]_f^{1\mapsto\text{cally}} \quad \#$$

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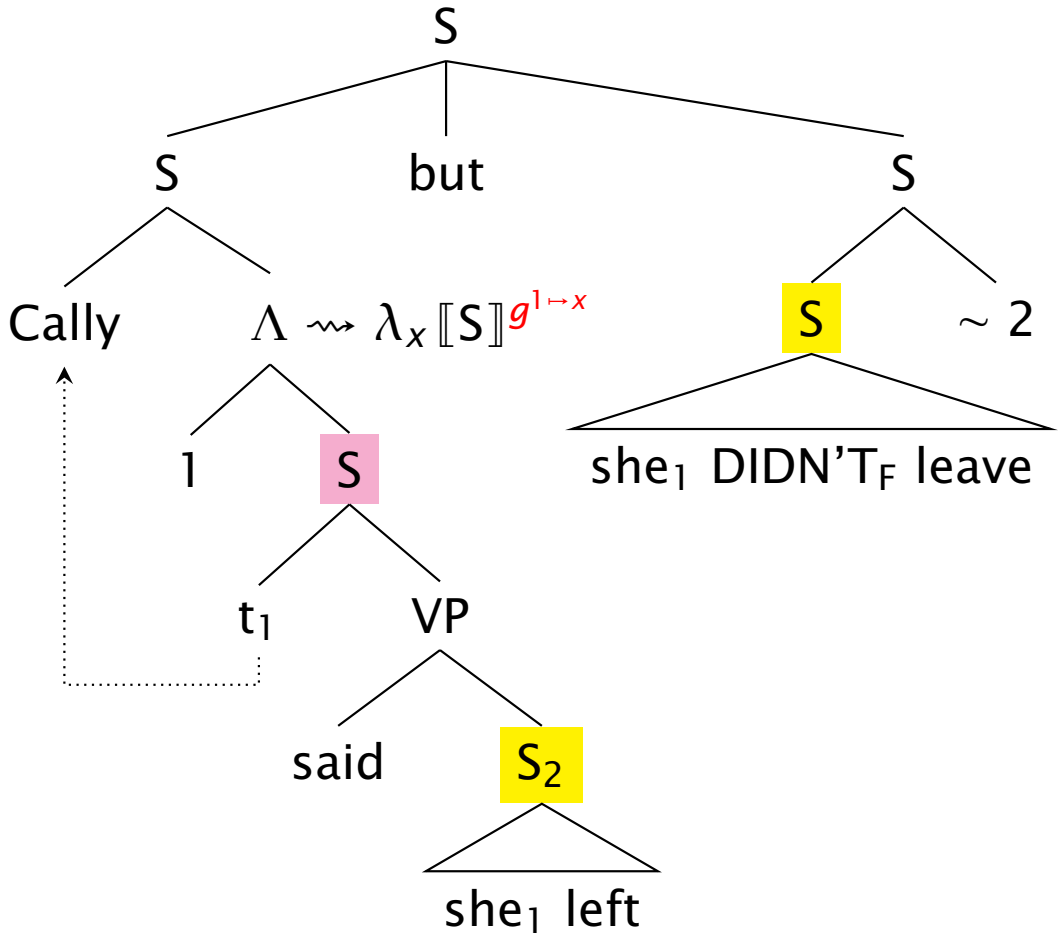

$$\llbracket \text{she}_1 \text{ left} \rrbracket^{1 \mapsto \text{cally}} \notin \llbracket \text{she}_1 \text{ DIDN'T}_F \text{ leave} \rrbracket_f^{1 \mapsto \text{mary}} \quad \#$$

Updating Schwarzschild (1999)

- **GIVENness:** If *B* isn't F-marked, it must be GIVEN ⊣
- *B* is **GIVEN** iff it is the sister of ∼ ⊣
- **AvoidF:** F-mark as little as possible (w/o violating GIVENness) ⊣

See Büring (2016) for discussion of a very similar system.

Akan data due to Augustina Owusu (p.c.):

(13) Kofi re-pa Kwame ho.
Kofi PROG-pass Kwame body
'Kofi is overtaking Kwame'

Deebi! KWAME na ɛ-re-pa KOFI ho no.
No! Kwame FOC 3SG-PROG-pass Kofi body DEF
'No, KWAME is overtaking KOFI.'

No, though usually analyzed as a cross-categorial definite/familiarity marker (cf. Renans 2018 on Ga) can mark clauses that are GIVEN.

We stand in need of one more revision:

(14) Steph [1 t_1 liked his$_1$ shot] and SETH$_F$ [2 t_2 liked his$_2$ shot].

We do not need to stress the second *his*. But while the latter orange node is GIVEN, the latter yellow node is **not**. (Very much like 'rebinding'.)

$$[\![\text{his}_1 \text{ shot}]\!]^{1\mapsto\text{steph}} \notin [\![\text{his}_1 \text{ shot}]\!]^{2\mapsto\text{seth}}_{f} \quad \#$$

GIVENness must be weakened, on pain of being unsatisfiable:

- **GIVENness:** If *B* isn't F-marked, it must be GIVEN, or dominated by a node that is GIVEN ⊣

This is a new argument for something similar to "Maximize Background".

Truckenbrodt 1995, Wagner 2006, 2012, Büring 2008, 2016

The basic patterns are reproduced with indexical expressions:

(15) (I'm the best.) No, I_F am!

(16) (I ran a marathon.) Yes, you did.

But there is a striking disanalogy in *index-dependency*:

(17) In '92 the Potus was a Bush. #In '04 [the POTUS]$_F$ was a Bush.

GIVENness relates *meanings* via $\sim$. We've seen ample evidence that the meanings of pronouns (indexicals) saturate the assignment (context).

Data like (17) suggest the *meaning* of the DD doesn't saturate the index:

$$[\![\alpha]\!]^{c,g} = \ldots\lambda_{(w,t)}\ldots \qquad \text{not} \qquad [\![\alpha]\!]^{c,g,(w,t)} = \ldots$$

A better theory of ellipsis

Ellipsis requires identity.

(18) I saw an elk from France. Did YOU_F (see an elk from France)?

(19) I saw her, but YOU_F DIDN'T_F (see her).

Sloppy readings are easy to accommodate:

(20) Mary [λ_i t_i likes her_i office], but SUE_F DOESN'T_F (λ_j t_j like her_j office).

Sag characterized *A* and *E* here as 'alphabetic variants', a relation inspired by the λ-calculus notion of α-equivalence (though distinct).

Keenan (1971), Sag (1976), Williams (1977)

Sloppy pronouns don't need to be bound inside *E* ('**rebinding**'):

(21) John$_i$'s mom likes him$_i$. BILL$_{F,j}$'s mom DOESN'T$_F$ (like him$_j$).

(22) Bagels$_i$ [I like t$_i$]. DONUTS$_{F,j}$ [I DON'T$_F$ (like t$_j$)].

(23) Every dog$_i$ thinks I like it$_i$. Every CAT$_{F,j}$ thinks I DON'T$_F$ (like it$_j$).

(24) If I see a cat$_i$ I pet it$_i$. If I see a DOG$_{F,j}$ I DON'T$_F$ (pet it$_j$).

Same range of interpretations available under deaccenting.

See Hirschbühler 1982, Evans 1988, Jacobson 1992, Rooth 1992b, Hardt 1993, Fiengo & May 1994, Tomioka 1999, Takahashi & Fox 2005, and many others.

Two-part theory of ellipsis licensing (Rooth 1992b)

Ellipsis is licensed whenever the following two conditions are satisfied:

- Syntactic: $A \approx E$ Syntactic identity **up to variable names**
- Semantic: $\Gamma[A] \cong \Delta[E]$ A and E are (in) **congruent** structures

Note that $\cong$ is the **ex situ** congruence relation.

$$\text{John}_1\ [\text{t}_1\ \text{likes}\ \text{his}_1\ \text{mom}] \cong \text{BILL}_{F,2}\ [\text{t}_2\ \text{does}\ (\text{like}\ \text{his}_2\ \text{mom})]$$

$$\text{likes}\,(\text{mom}\,j)\,j \quad \in \quad \{\text{likes}\,(\text{mom}\,x)\,x \mid x : \text{e}\}$$

$$\text{John}_1\ [\text{t}_1\ \text{mom}\ \text{likes}\ \text{him}_1] \cong \text{BILL}_{F,2}\ [\text{t}_2\ \text{mom}\ \text{does}\ (\text{like}\ \text{him}_2)]$$

$$\text{likes}\,j\,(\text{mom}\,j) \quad \in \quad \{\text{likes}\,x\,(\text{mom}\,x) \mid x : \text{e}\}$$

Binding in the elliptical clause guarantees that congruence is satisfied.

In general, the interaction of binding and alternatives creates complications (Poesio 1996, Shan 2004, Romero & Novel 2013, Charlow 2018). This won't affect any of my points.

Hard to oversell how successful, illuminating this approach has been.

- Congruence is a feature of grammar not specific to ellipsis (Schwarzschild 1999, Büring 2016, cf. Tancredi 1992, Fox 1999).

The syntactic condition is unfortunate (e.g., Merchant 2001). There are reasons to think the ellipsis-specific identity relation is *exact*.

Something akin to congruence is present even in dissenters from the overall Roothian picture (e.g., Merchant 2001, Kehler 2000, building on Hobbs 1979).

Why not just coindex the sloppy pronoun and its correlate in *A*?

$$\text{Mary}_1\ [\text{t}_1\ \text{likes her}_1\ \text{office}\ ] \cong \text{SUE}_{F,1}\ [\text{t}_1\ \text{does}\ (\text{like her}_1\ \text{office})\ ]$$

$$\text{likes}(\text{m}, \text{office}(\text{m})) \quad \in \quad \{\text{likes}(x, \text{office}(x)) \mid x : \text{e}\}$$

Actually, this needs to be *ruled out*:

(25) Newt likes her$_1$ cat and CALLY$_F$ [1 t$_1$ does (like her$_1$ cat)] too.

(26) Steph hopes I cite him$_1$ and SETH$_F$ [1 t$_1$ hopes YOU$_F$ (cite him$_1$)].

(27) Cally [1 t$_1$ said she$_1$ left] but she$_1$ DIDN'T$_F$ (leave).

No Meaningless Coindexing (NMC) (Heim 1997: 202)

If an LF contains an occurrence of a variable v that is bound by a node α, then all occurrences of v in this LF must be bound by the same node α.

Sag defined a context-sensitive sense of 'alphabetic variance' distinct from the λ-calculus notion, to similar effect.

Sag 1976, Tomioka 1995, Romero 1998, Sauerland 1998, 2004, Kennedy 2004, 2014, Takahashi & Fox 2005, Takahashi 2006, Hartman 2011, Roelofsen 2011, Crnič 2017.

Consider what's implied by NMC and prohibitions on Redundancy:

- NMC: multiple referents imply multiple indices
- No Redundancy: multiple indices imply multiple referents

Together this entails indices are in 1-1 correspondence with referents.
But then clearly it's the referents that matter, not the indices!

The in situ characterization of GIVENness models this well.

The difficulties here are entirely due to using an **ex situ** $\cong$.

They vanish with an in situ congruence mechanism, e.g., $\sim$. The LFs generating impossible readings cannot satisfy $\sim$.

(28) Newt likes her$_1$ cat and CALLY$_F$ [1 t$_1$ does # (like her$_1$ cat)] too.

(29) Al hopes I cite him$_1$ and BO$_F$ [1 t$_1$ # hopes YOU$_F$ (cite him$_1$)].

(30) Cally [1 t$_1$ said she$_1$ left] but # she$_1$ DIDN'T$_F$ (leave).

Getting rid of NMC means we can require exact identity in ellipsis,

(31) John$_i$'s mom likes him$_i$. BILL$_{F,i}$'s mom DOESN'T$_F$ (like him$_i$).

Why might we want this? Ellipsis *sites* exhibit variable-like behavior.

(32) When John has to cook, he doesn't want to (cook).
When he has to CLEAN, he doesn't (want to clean) either.

(33) John bought the books$_1$ he was supposed to (buy t_1).
But he READ the books$_2$ he WASN'T (supposed to read t_2).

Strongly suggests that an anaphora-like process undergirds ellipsis resolution But anaphora is a relation based on *exact identity* (of meaning).

Gardent (1991), Hardt (1994, 1999), Schwarz (2000), Tomioka (2008), Elbourne (2008).

The dynamics of ~

What does it mean for A_n, the antecedent of $B \sim n$, to bear an index?

- Could mean A_n binds $B \sim n$
- Could mean the two are merely coreferential

Treating B's GIVENness in situ via $\sim$ speaks in favor of **binding**.

Intuitively the second conjunct counts as GIVEN in light of the first:

(34) Every boy$_1$ said [Seth likes him$_1$]$_2$ and [STEPH$_F$ likes him$_1$] $\sim$ 2.

Yet this is impossible if $\sim$ and its 'antecedent' are merely coreferential.
That requires there to be a contextual value for 2 such that, for any boy x:

$$g(2) \in \{\text{like}\,(y, x) \mid y : \text{e}\}$$

The focus set varies with x! No single value for $g(2)$ can do all this work.
[At best, $g(2)$ will be 'about' one of the relevant boys.]

If *Seth likes him$_1$* **binds** $\sim$ *2*, the value of 2 shifts boy-by-boy:

every boy [1 ... [Seth likes him$_1$] [λ_2 t$_2$ and [STEPH$_F$ likes him$_1$] $\sim$ 2]]

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a	likes(seth, a)

$g(2) \in \{\text{likes}(x, \text{a}) \mid x : \text{e}\}$ ✓

If *Seth likes him*$_1$ **binds** $\sim$ *2*, the value of 2 shifts boy-by-boy:

every boy [1 ... [Seth likes him$_1$] [λ_2 t$_2$ and [STEPH$_F$ likes him$_1$] $\sim$ 2]]

b	likes(seth, b)

$g(2) \in \{\text{likes}(x, \text{b}) \mid x : \text{e}\}$ ✓

If *Seth likes him*$_1$ **binds** $\sim$ *2*, the value of 2 shifts boy-by-boy:

every boy [1 ... [Seth likes him$_1$] [λ_2 t$_2$ and [STEPH$_F$ likes him$_1$] $\sim$ 2]]

c	likes(seth, c)

$g(2) \in \{\text{likes}(x, \text{c}) \mid x : \text{e}\}$ ✓

If *Seth likes him*$_1$ **binds** $\sim$ *2*, the value of 2 shifts boy-by-boy:

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a	likes(seth, a)	$g(2) \in \{\text{likes}(x, \text{a}) \mid x : \text{e}\}$ ✓
b	likes(seth, b)	$g(2) \in \{\text{likes}(x, \text{b}) \mid x : \text{e}\}$ ✓
c	likes(seth, c)	$g(2) \in \{\text{likes}(x, \text{c}) \mid x : \text{e}\}$ ✓

GIVENness/$\sim$ are often said to be *anaphoric* (Rooth 1992a, 2016, Schwarzschild 1999). Treating $\sim$ in situ forces us to take this seriously.

The occurrences of $\sim$ in (35) and (36) are *donkey pro-forms*.

(35) If [a cat_6 [Mary likes t_6]$_5$] you can bet that [SUE_F LOVES_F it_6] $\sim$ 5

(36) If [[the copier or the fax]$_7$ [you use t_7]$_8$] [I_F CAN'T_F (use it_7)] $\sim$ 8

So $\sim$ participates in the same binding configs as pronouns (Partee 1973). A complete account will model $\sim$ dynamically (Charlow 2012, 2015).

See also Rooth & Partee 1982, Stone 1992, Fiengo & May 1994

Kicking the tires

On the other hand, whereas binding seems sensitive to linearity (roughly), it's well known that $\sim$ satisfaction can be cataphoric (Rooth 1992a):

(37) An AMERICAN$_F$ farmer was talking to a CANADIAN$_F$ farmer.

Brasoveanu & Szabolcsi (2013) argue that this shows $\sim$ imposes itself *after* the sentence has been composed — i.e., is 'post-suppositional'.

(38) A-mo hashitta. 'A ran away too'

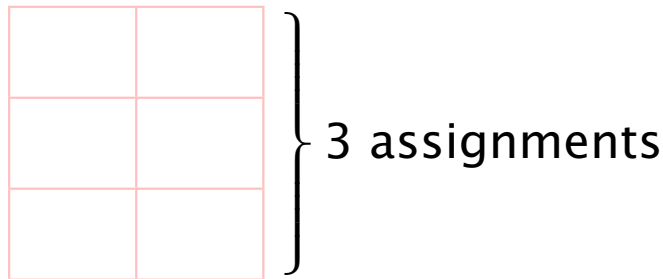
(39) A-mo B-mo hashitta. 'A and B ran away'

To get a flavor for post-suppositions, let's consider a paradigm use-case: marking dependent interpretations (Henderson 2014, Law 2018).

(40) Every boy saw a movie. Some even enjoyed it.

(41) Every boy saw a-RED movie. (Requires multiple movies seen.)

The context reflects the dependency between boys and movies seen:



This dependency can be anaphorically retrieved as in (40), or required to **post-suppositionally** yield multiple movies, as in (41).

See van den Berg 1996, Nouwen 2003, Brasoveanu 2007 on plural dynamic semantics

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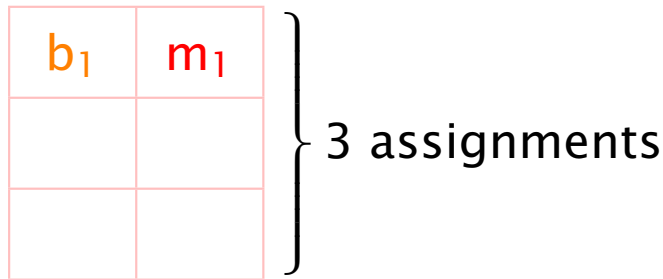

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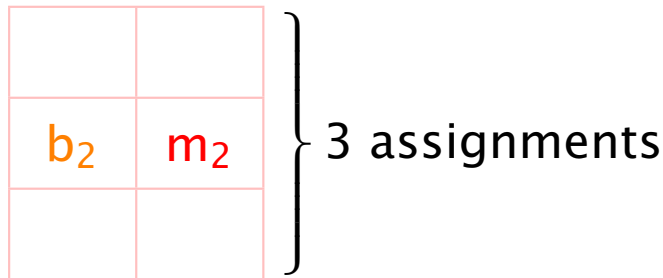

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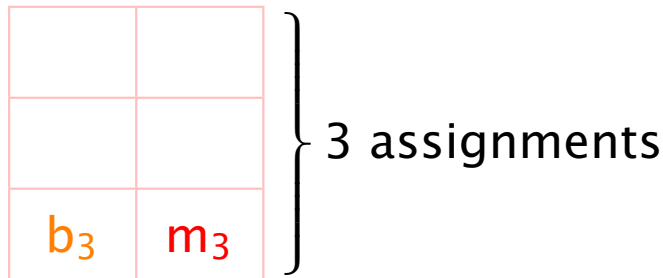

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The context reflects the dependency between boys and movies seen:

b_1	m_1
b_2	m_2
b_3	m_3

} 3 assignments

This dependency can be anaphorically retrieved as in (40), or required to **post-suppositionally** yield multiple movies, as in (41).

See van den Berg 1996, Nouwen 2003, Brasoveanu 2007 on plural dynamic semantics

(42) I saw t_i [the man YOU$_F$ did (see t_j)]$_i$.

(43) I saw t_i [a book about the man YOU$_F$ did (*see t_j)]$_i$.

Kennedy 1994, 2014, Sauerland 1998, 2004, Fox 2002, Jacobson 2000, 2004, 2009

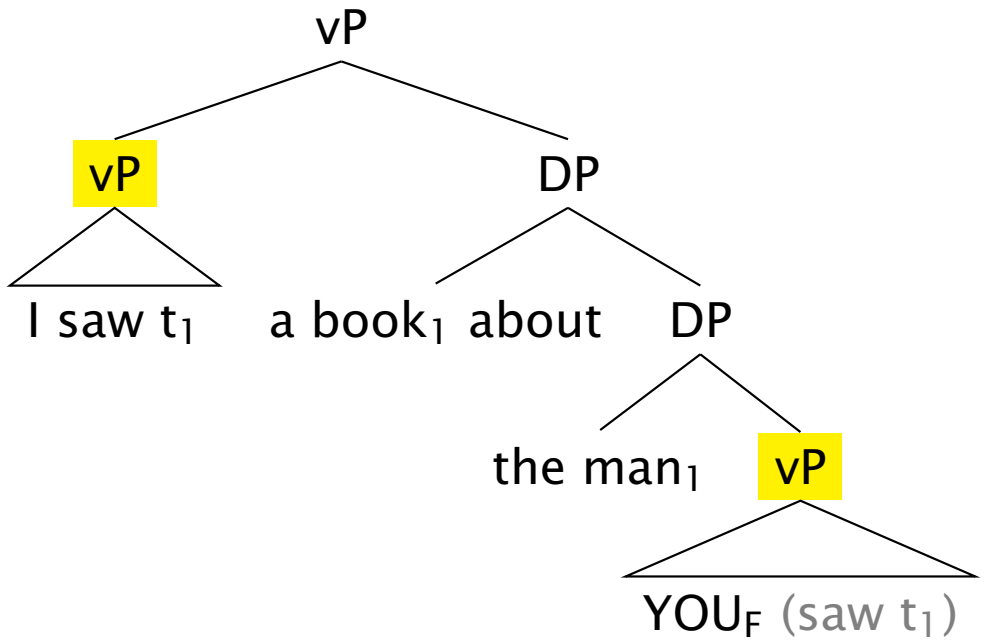
Heim (1997) proposes to explain the data as a failure of $\cong$.

(44) [I saw t_i]$_n$ [the man$_i$ [YOU$_F$ did (see t_i)] $\sim$ n].

(45) [I saw t_i]$_n$ [a book$_i$ about the man$_j$ [YOU$_F$ did (*see t_j)] $\sim$ n].

I saw t_i $\ncong$ YOU$_F$ saw t_j, whence the ungrammaticality of (45).

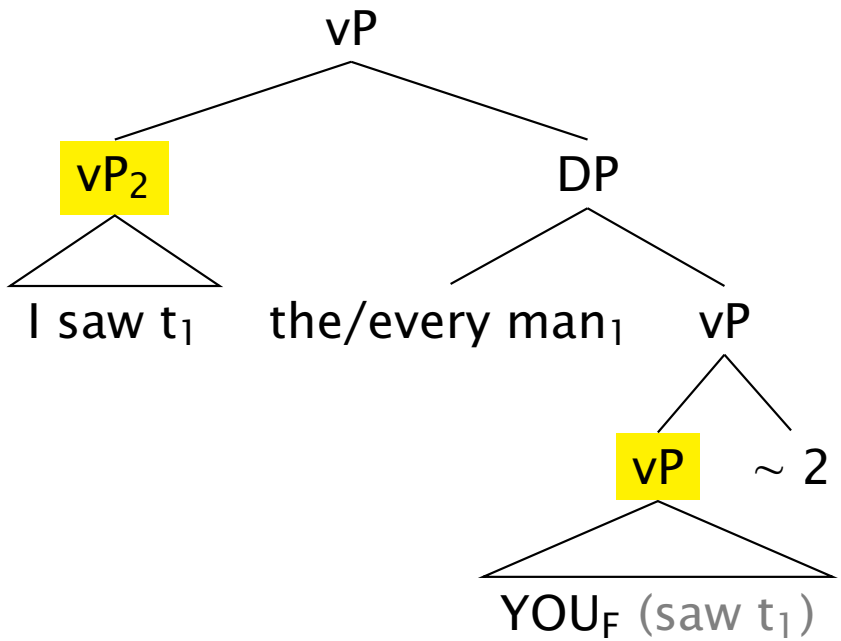
Relies on NMC to avoid spurious $\cong$ satisfaction.



There is no way for ~ to relate the vPs, even with coindexing: the first trace evaluates to a book; the second trace evaluates to a man.

Jacobson (2004, 2009) argues something very similar within a variable-free system.

But how is ~ satisfied in the *good* cases? A configuration like the one below looks good at first, but remember that ~ 2 needs be bound!



The DP necessarily binds into vP_2. How can vP_2 bind ~ 2?

See Koster-Moeller & Hackl 2008 for some of the complexities of using ~ in ACD.

Recall from earlier that $\sim$ satisfaction can be symmetric. As Brasoveanu & Szabolcsi argue, this suggests that $\sim$ satisfaction is post-suppositional.

(46) An AMERICAN$_F$ farmer was talking to a CANADIAN$_F$ farmer.

(47) A-mo B-mo hashitta. 'A and B ran away'

Notably anticipatory stress is common (obligatory?) in ACD:

(48) I$_F$ read everything YOU$_F$ did.

[John read t_1] [everything^1 MARY$_F$ did (read t_1)]

2 2~3

a		

Should ~ distributively require satisfaction in every row (assignment), or would something weaker be appropriate? The weaker notion could be consistent with the head-identity effects noted by Sauerland (1998, 2004).

[John read t_1] [everything^1 MARY$_F$ did (read t_1)]

2 2~3

a		{read(x, a) | x : e}

Should ~ distributively require satisfaction in every row (assignment), or would something weaker be appropriate? The weaker notion could be consistent with the head-identity effects noted by Sauerland (1998, 2004).

[John read t_1] [everything^1 MARY$_F$ did (read t_1)]

2 2~3

a	read(j, a)	{read(x, a) | x : e}

Should ~ distributively require satisfaction in every row (assignment), or would something weaker be appropriate? The weaker notion could be consistent with the head-identity effects noted by Sauerland (1998, 2004).

[John read t_1] [everything^1 MARY$_F$ did (read t_1)]

2 2~3

b	read(j, b)	{read(x, b) | x : e}

Should ~ distributively require satisfaction in every row (assignment), or would something weaker be appropriate? The weaker notion could be consistent with the head-identity effects noted by Sauerland (1998, 2004).

[John read t_1] [everything^1 MARY$_F$ did (read t_1)]

2 2~3

c	read(j, c)	{read(x, c) | x : e}

Should ~ distributively require satisfaction in every row (assignment), or would something weaker be appropriate? The weaker notion could be consistent with the head-identity effects noted by Sauerland (1998, 2004).

[John read t_1] [everything^1 MARY_F did (read t_1)]

2 2~3

a	read(j, a)	{read(x, a) | x : e}
b	read(j, b)	{read(x, b) | x : e}
c	read(j, c)	{read(x, c) | x : e}

Should ~ distributively require satisfaction in every row (assignment), or would something weaker be appropriate? The weaker notion could be consistent with the head-identity effects noted by Sauerland (1998, 2004).

[John read t_1] [everything^1 MARY$_F$ did (read t_1)]

2 2~3

a	read(j, a)	$\{\text{read}(x, \text{a}) \mid x : \text{e}\}$	✓
b	read(j, b)	$\{\text{read}(x, \text{b}) \mid x : \text{e}\}$	✓
c	read(j, c)	$\{\text{read}(x, \text{c}) \mid x : \text{e}\}$	✓

Should ~ distributively require satisfaction in every row (assignment), or would something weaker be appropriate? The weaker notion could be consistent with the head-identity effects noted by Sauerland (1998, 2004).

(49) Every third grade boy likes his mom.
And every FOURTH$_F$ grade boy likes his mom.

(50) Every third grade boy likes his mom.
And every FOURTH$_F$ grade boy likes HIS$_F$ mom.

Sauerland (1998, 2000), Jacobson (2000), Dimitriadis (2001), Mayr (2012)

What is the focused bound pronoun contrasting with?

In light of the non-focused variant, why isn't this overfocusing?

Every TGB^{1} [t_1 likes $\underbrace{\mathrm{his}_1\ \mathrm{mom}}_{2}$]. Every $\mathrm{FGB}_{F}{}^{3}$ [t_3 likes $\underbrace{\mathrm{HIS}_{F,3}\ \mathrm{mom}}_{2\sim4}$].

a	mom a	d	{mom d, mom a, . . .}
b	mom b	e	{mom e, mom b, . . .}
c	mom c	f	{mom f, mom c, . . .}
. . .	. . .	. . .	. . .

Every TGB^1 [t_1 likes $\underbrace{\mathrm{his}_1 \ \mathrm{mom}}_{2}$]. Every $\mathrm{FGB}_F{}^3$ [t_3 likes $\underbrace{\mathrm{HIS}_{F,3} \ \mathrm{mom}}_{2\sim4}$].

a	mom a	d	{mom d, mom a, ...}	✓
b	mom b	e	{mom e, mom b, ...}	✓
c	mom c	f	{mom f, mom c, ...}	✓
...	...	...	...	...

$$\overbrace{\text{Every TGB}^{1}\ [t_1\ \text{likes}\ \underbrace{\text{his}_1}_{2}\ \text{mom}]}^{5}.\ \overbrace{\text{Every FGB}_{F}{}^{3}\ [t_3\ \text{likes}\ \underbrace{\text{HIS}_{F,3}}_{2\sim4}\ \text{mom}]}^{5\sim6}.$$

a	mom a	d	{mom d, mom a, . . .}	✓
b	mom b	e	{mom e, mom b, . . .}	✓
c	mom c	f	{mom f, mom c, . . .}	✓
. . .	. . .	. . .	. . .	. . .

$$\underbrace{\text{Every TGB}^{1}\ [t_1\ \text{likes his}_1\ \text{mom}]}_{2}.\ \underbrace{\text{Every FGB}_{F}{}^{3}\ [t_3\ \text{likes his}_3\ \text{mom}]}_{2\sim4}.$$

Wrapping up

Congruence is a compositional, anaphoric, dynamic process.

Indices matter a lot less for ellipsis and deaccenting than thought. They help determine values for variables. But it's the *values* that are important.

Facilitates big simplifications in grammar (e.g., no NMC), potential for exact-identity-oriented theories of ellipsis (at last!), and offers a fresh perspective on some old facts.

Thank you for listening

Extras

A dynamic architecture is important to the analysis of ∼. But in dynamic systems, coindexing can mean overwriting an existing value:

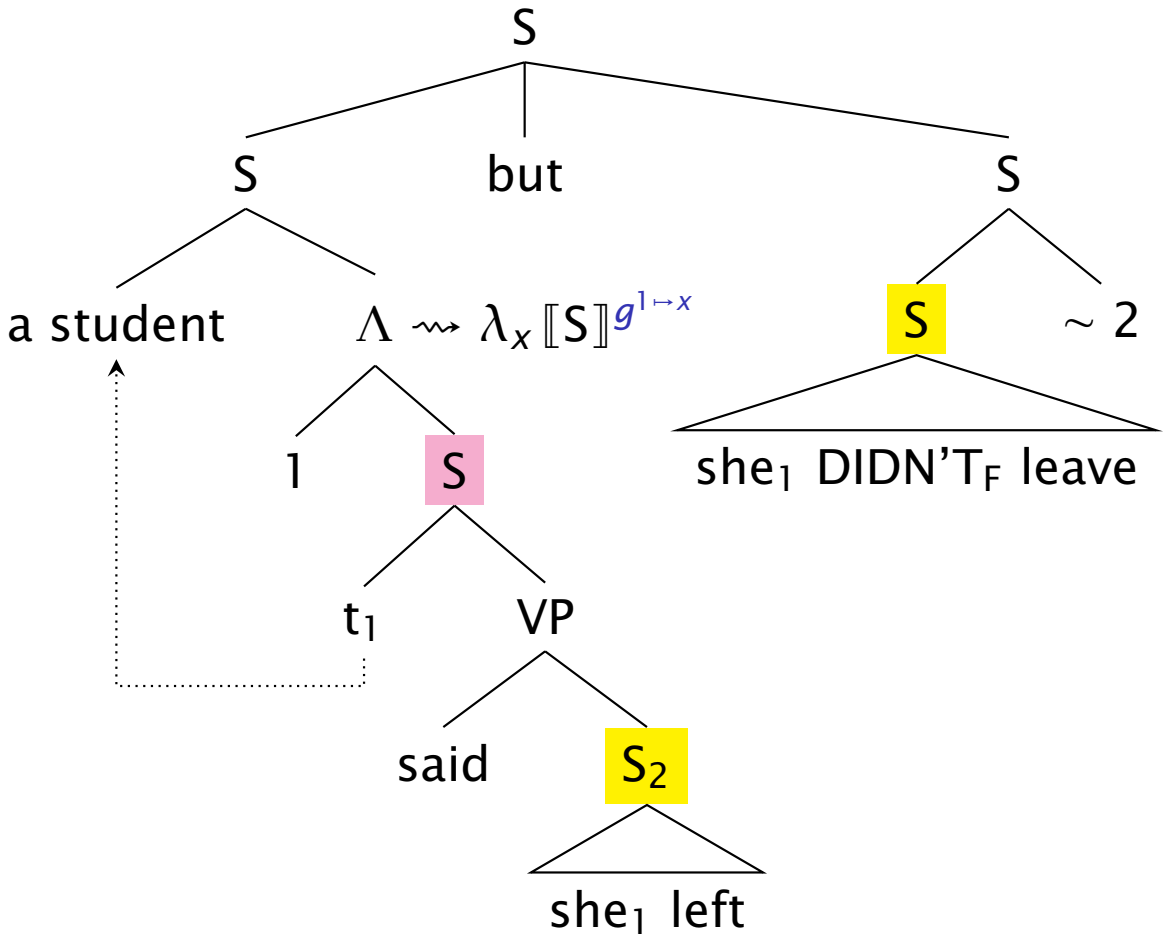
m	likes (cat m)	⟼	c	likes (cat m)	{likes (cat c)}

But sloppy readings don't prevent us from referring back to the initial value for 1. Solved with a slightly enriched representation of context, *referent systems*:

$$\underbrace{\begin{array}{r} \\ 2 \mapsto c \\ b \\ 1 \mapsto a \end{array}}_{r} \qquad \underbrace{\begin{array}{r} 1 \mapsto d \\ 2 \mapsto c \\ b \\ a \end{array}}_{r^{1 \mapsto d}}$$

Vermeulen (1995), Groenendijk, Stokhof & Veltman (1996), Nouwen (2007)

Dynamic binding is important even for basic cases.



The following sentences are intuitively in contrast (Schwarzschild 1993):

(51) [No monkey$_1$ hit itself$_1$]$_2$. [EVERY$_F$ monkey$_3$ hit [the TRAINER]$_F$] $\sim$ 2.

- $[\![\cdot]\!]_f$ contains bindable '*intensions*' (as in Rooth 1985)
- Yet $\sim$'s presuppositions are assessed '*extensionally*'

Schwarzschild (pp. 17ff) considered these two points in...tension and later (1997, 1999) developed a theory modeling the latter (but not the former).

$$[\![\alpha\ \beta]\!]^g = \mathcal{O}([\![\alpha]\!]^g, [\![\beta]\!]^g)$$

$$[\![\alpha\ \beta]\!]^g_f = \{\mathcal{O}(a, b) \mid a \in [\![\alpha]\!]^g_f, b \in [\![\beta]\!]^g_f\}$$

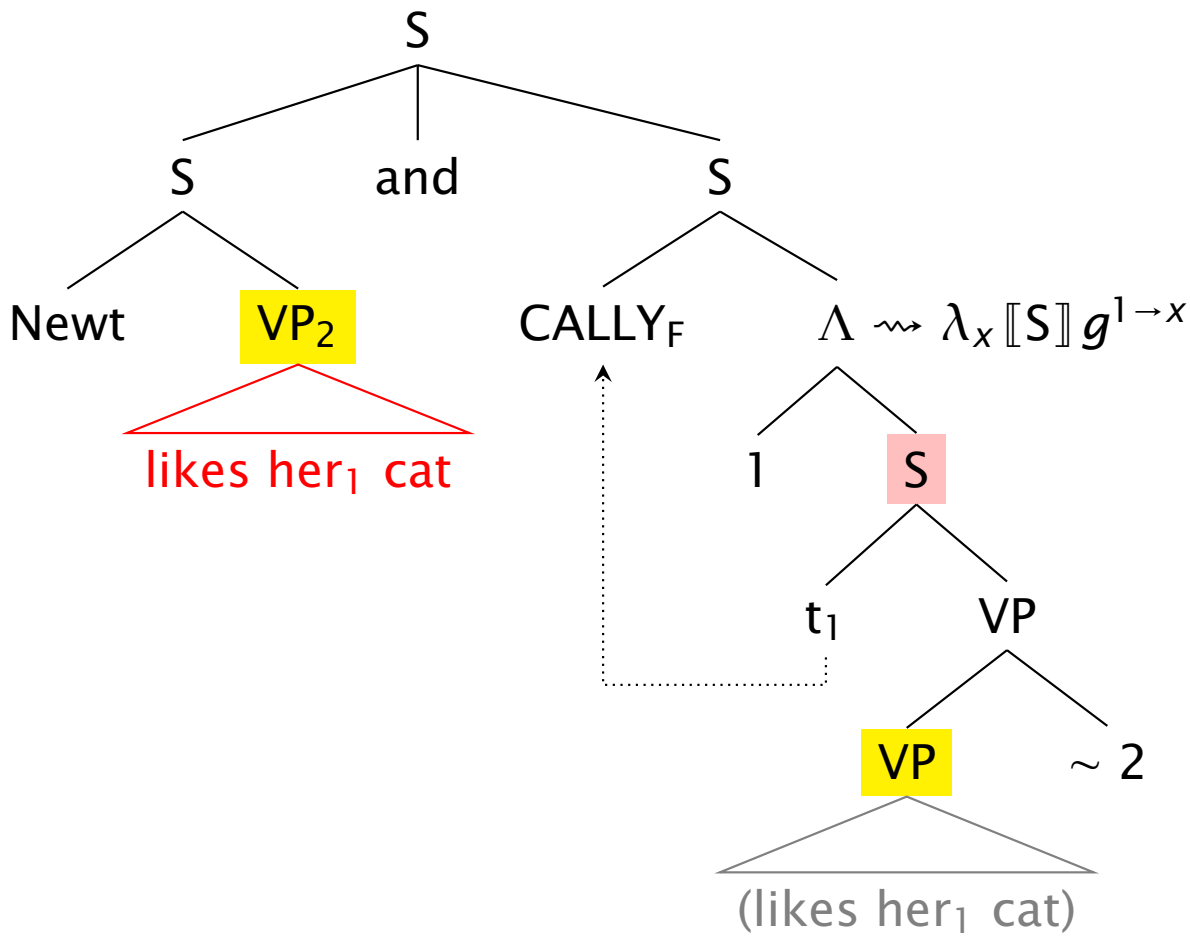
$$[\![\alpha\ \beta]\!] = \lambda_g \mathcal{O}([\![\alpha]\!]g, [\![\beta]\!]g)$$

$$[\![\alpha\ \beta]\!]_f = \{\lambda_g \mathcal{O}(ag, bg) \mid a \in [\![\alpha]\!]_f, b \in [\![\beta]\!]_f\}$$

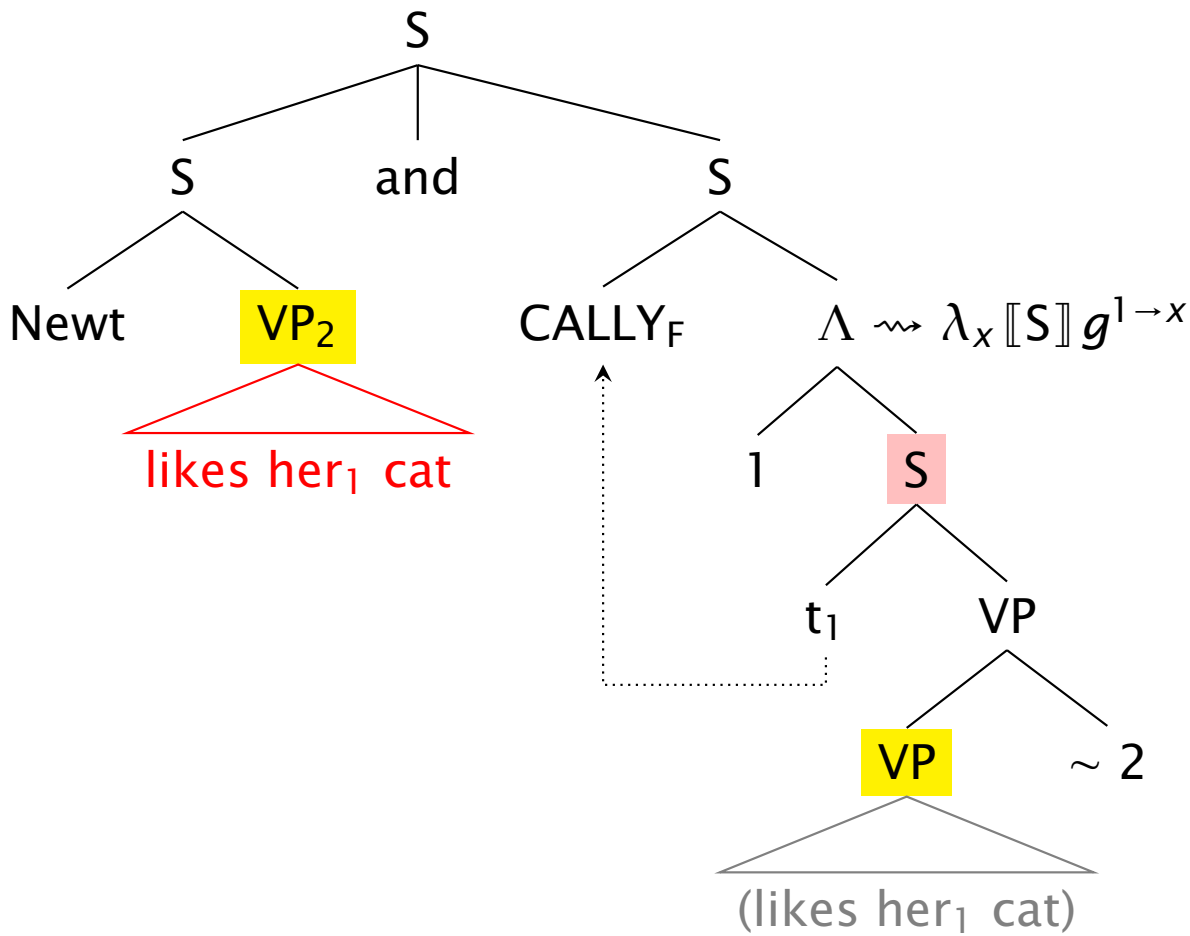
Rooth 1985, Schwarzschild 1993, Poesio 1996, Romero & Novel 2013

$$[\![\alpha \sim n]\!]^g := \begin{cases} [\![\alpha]\!]^g \text{ if } g(n) \in [\![\alpha]\!]^g_f \wedge g(n) \neq [\![\alpha]\!]^g \\ \text{undefined otherwise} \end{cases}$$

$$[\![\alpha \sim n]\!]\, g := \begin{cases} [\![\alpha]\!]\, g \text{ if } g(n) \in \{m\, g \mid m \in [\![\alpha]\!]_f\} \wedge g(n) \neq [\![\alpha]\!]\, g \\ \text{undefined otherwise} \end{cases}$$



m	likes (cat m)	⟼	c	likes (cat m)	$\{\lambda_g$ likes (cat $g(1)$)$\}$



m	likes (cat m)	⟼	c	likes (cat m)	{likes (cat c)}

(52) Every TGB^{1} [t_1 likes $\underbrace{\text{his}_1 \text{ mom}}_{2}$]. *Every $\text{FGB}_F{}^{3}$ [t_3 likes $\underbrace{\text{HER}_{F,2}}_{2\sim4}$].

a	$\lambda_g \text{mom}\, g_1$	d	$\{\lambda_g \text{mom}\, g_1, \ldots\}$
b	$\lambda_g \text{mom}\, g_1$	e	$\{\lambda_g \text{mom}\, g_1, \ldots\}$
c	$\lambda_g \text{mom}\, g_1$	f	$\{\lambda_g \text{mom}\, g_1, \ldots\}$
...	...	...	...

Paychecks are anaphoric to an *intension* (Hardt 1999, Charlow 2017).

Congruence is satisfied (post-suppositionally), but Contrast cannot be.

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